Existing and Planned GES DISC services
and
A Use Case for a “Data List” from Multiple Products Collocated with Greenland Station Observations

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Outline

- Transition to User Registration using the Earthdata Login
- Existing Subsetting Capabilities
- Planned Subsetting Capabilities for the the New GES DISC Web page
- User Forum
- Data Lists
- Data Lists use case: AIRS and MERRA data matched up with Greenland Station observations

Earthdata Login

- Earthdata Login provides a single mechanism for user registration and profile management for all EOSDIS system components (DAACs, Tools, Services).
- This is being implemented across all EOSDIS data centers!
- Required for all EOSDIS services such as NASA Worldview, not just data center access.
- Data are still free of charge to the public!
- Uses the https protocol for secure access
- Allows EOSDIS to better track data usage and understand its users needs.

Earthdata Login

- GES DISC has implemented Earthdata Login as of July 2016
- Step 1: Register with Earthdata Login and setup username and password

  https://urs.earthdata.nasa.gov
- Step 2: Approve **NASA GESDISC DATA ARCHIVE** to use your Login profile for authentication
- ***IMPORTANT***: FTP access will end on Monday October 3, 2016.

New GES DISC Website

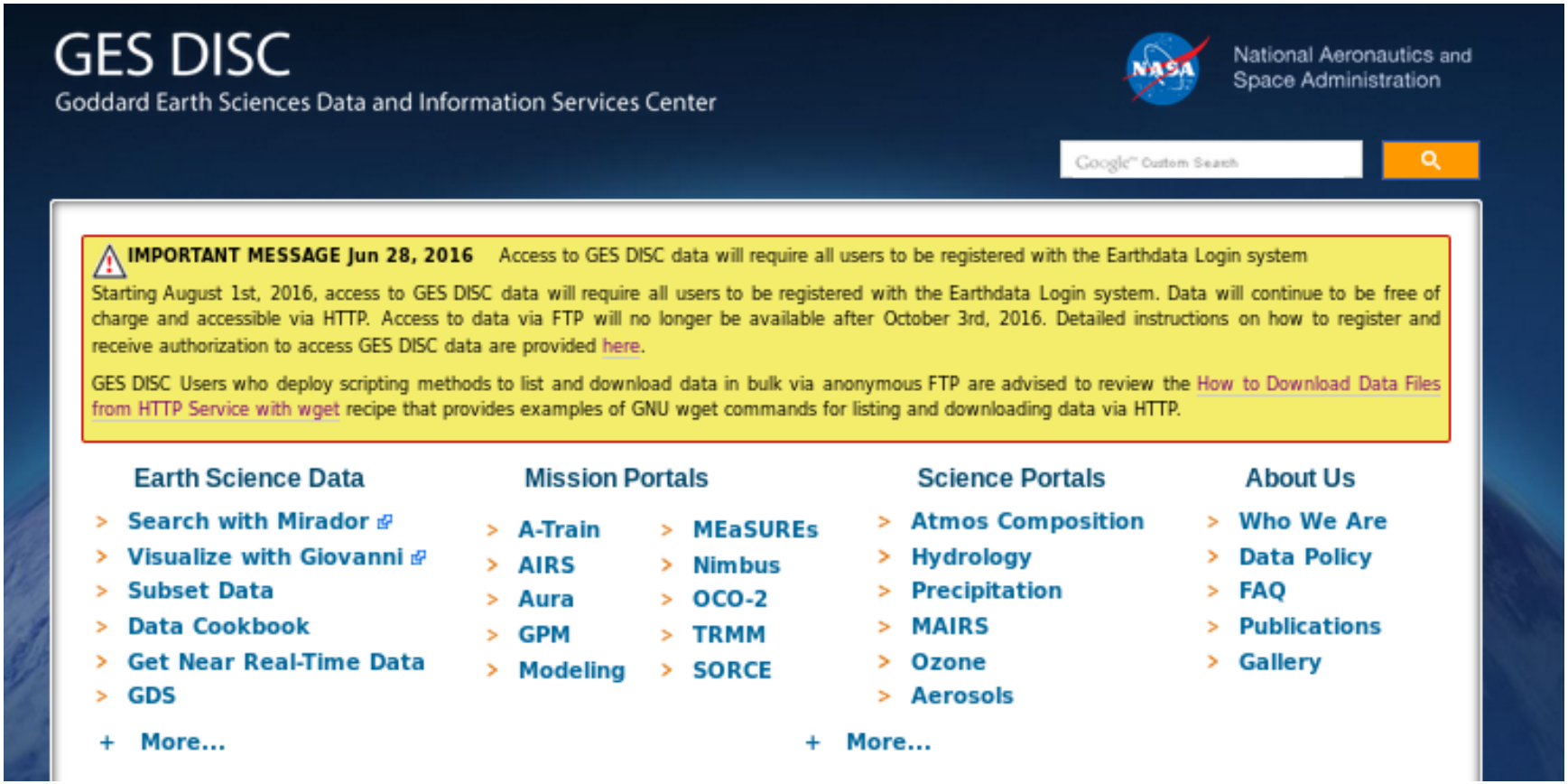
- The GES DISC is overhauling its web site with a new Unified User Interface

  http://disc.gsfc.nasa.gov/uui/

- Combine data products, documentation and services into a single location (reduce confusion for users on which subsetter, visualizer or other service to choose from)
- Allow users to search/find/navigate to **ANY RESOURCE**
  a) Data Granule Downloads (bulk and individual)
  b) Data Subsetting
  c) Data Visualization Services
  d) Data Documentation
  e) Data Landing Pages

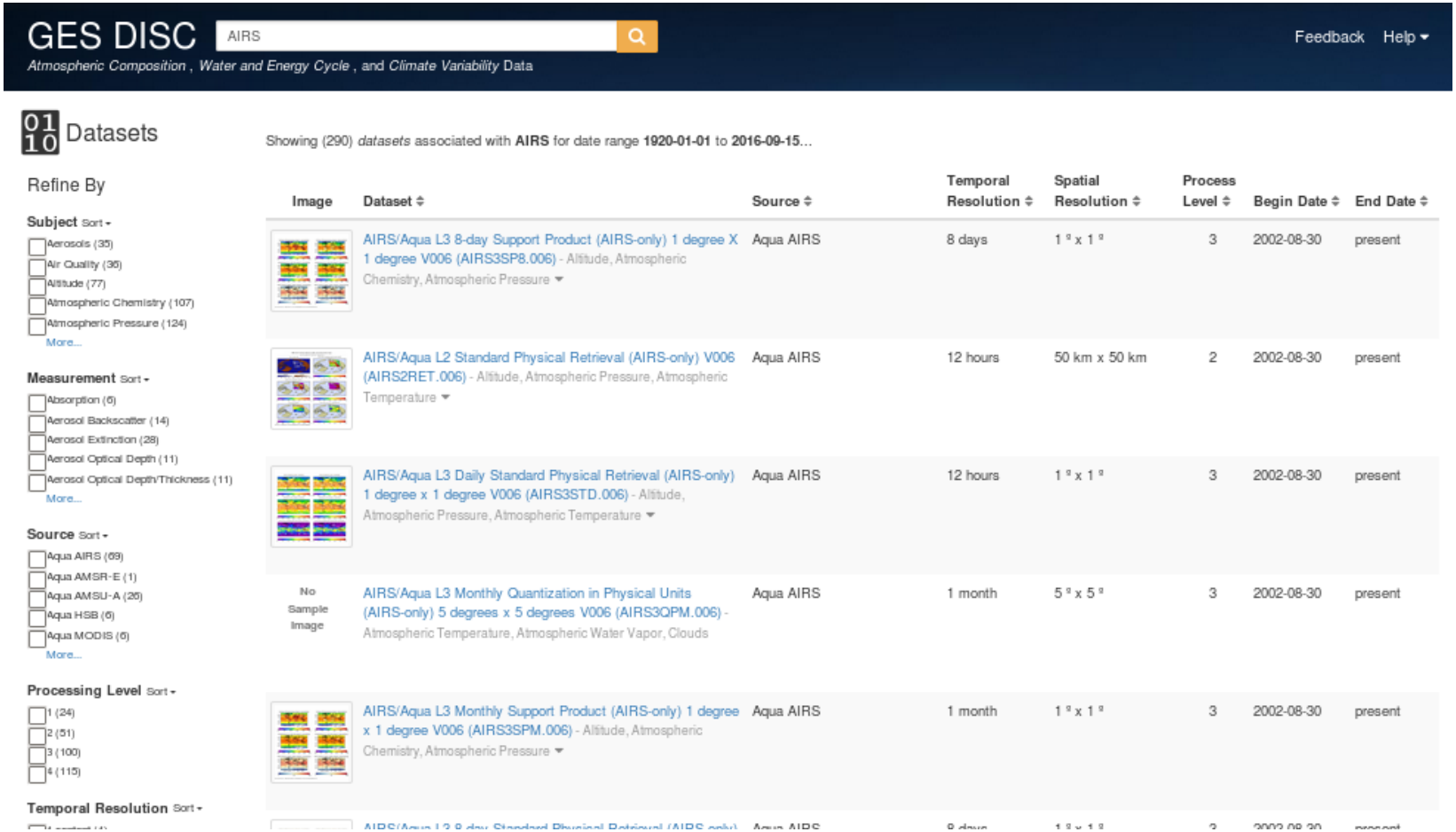
The Old GES DISC page

disc.gsfc.nasa.gov



The New GES DISC page

disc.gsfc.nasa.gov/uui



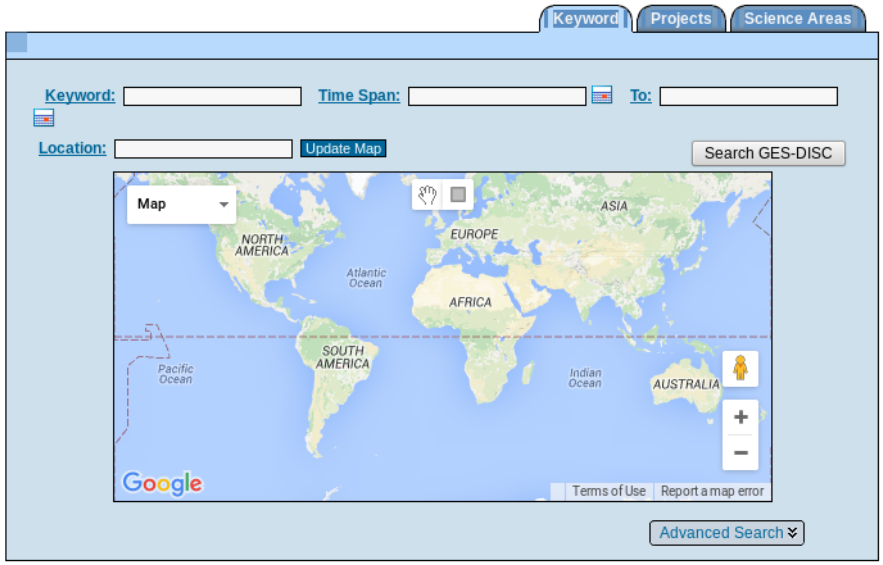
Current Web Interfaces for obtaining Subsets

Mirador: A data discovery tool that allows spatial and variable subsetting and data format conversion under some conditions

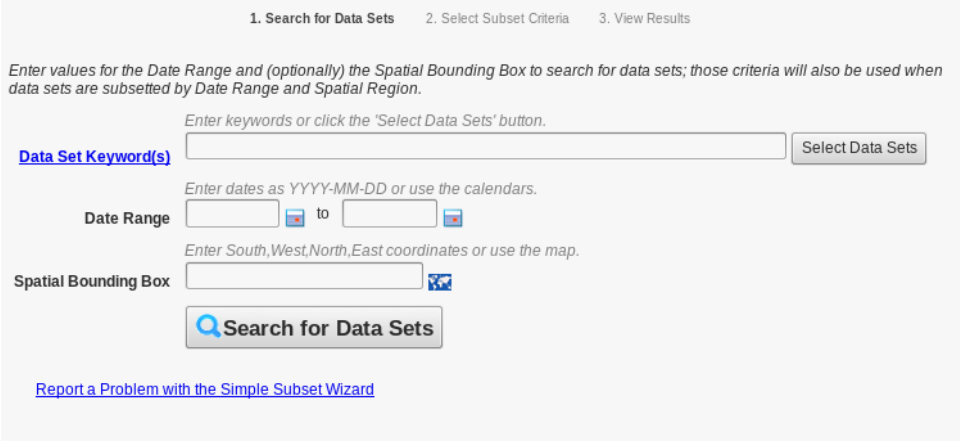
Simple Subset Wizard (SSW): A somewhat simpler data discovery tool that allows spatial and variable subsetting and data format conversion under some conditions

Current Web Interfaces for obtaining Subsets

mirador.gsfc.nasa.gov



disc.sci.gsfc.nasa.gov/SSW



Keyword: AIRX2RET
Start Time: 2002-09-06
End Time: 2002-09-06 23:59:59
Location: (20,-100),(40,-70)

Current Web Interfaces

Mirador

AIRX2RET.006 - Quality Screening and Variable Subsetting Service Options

Quality-Screen and Subset Variables for AIRX2RET. Each variable in a data file can be screened following procedures prescribed by the AIRS Science team, or excluded completely from the output. (more info) For more information on each of the variables see: Variable Explanation. Documentation on the Quality Screening process:Quality Criteria Explanation

Quality Screening and Variable Subsetting

Output Format Options

HDF netCDF Submit

Quality Screening Global Selections:

Best * Good ** NoScreening DoNotInclude

You may refine your selections below.

Select **Good** to screen all variables to follow Science Team criteria)

SUBSETTING Choice: Select **DoNotInclude** to remove the variable from the subset

Variable Refinement Selection

Moisture_Variables	Best *	Good **	NoScreening	DoNotInclude
H2OMMRStd	Best	Good	NoScreening	DoNotInclude
H2OMMRLevStd	Best	Good	NoScreening	DoNotInclude
H2OMMRSat	Best	Good	NoScreening	DoNotInclude
RelHumSurf	Best	Good	NoScreening	DoNotInclude
totCldH2OStd	Best	Good	NoScreening	DoNotInclude

Simple Subset Wizard (SSW)

1. Search for Data Sets **2. Select Subset Criteria** 3. Vie

Found 1 subsettable data set.

Subset: Variables for AIRX2RET v006 in HDF

- Air Temperature Variables
  - TAirStd
  - TAirStd_QC
  - TAirStdErr
  - TSurfAir
  - TSurfAir_QC
  - TSurfAirErr
  - Temp_dof
- Ancillary Along-Track Data Fields
- Ancillary Full-Swath Geolocation Fields
- Ancillary Full-Swath Surface Information from Geolocation
- Ancillary Per-Granule Data Fields
- Attributes
- Carbon Monoxide Variables
- Cloud Formation Variables on 3 by 3 AIRS Fields of View

- Only Variable subsets are supported
- Spatial Subsetting of Level 1 and Level 2 data is not supported.
- The SSW has 2000 file limit and Mirador has a 30000 file limit.
- Mirador allows for quality screening the Level 2 variables.

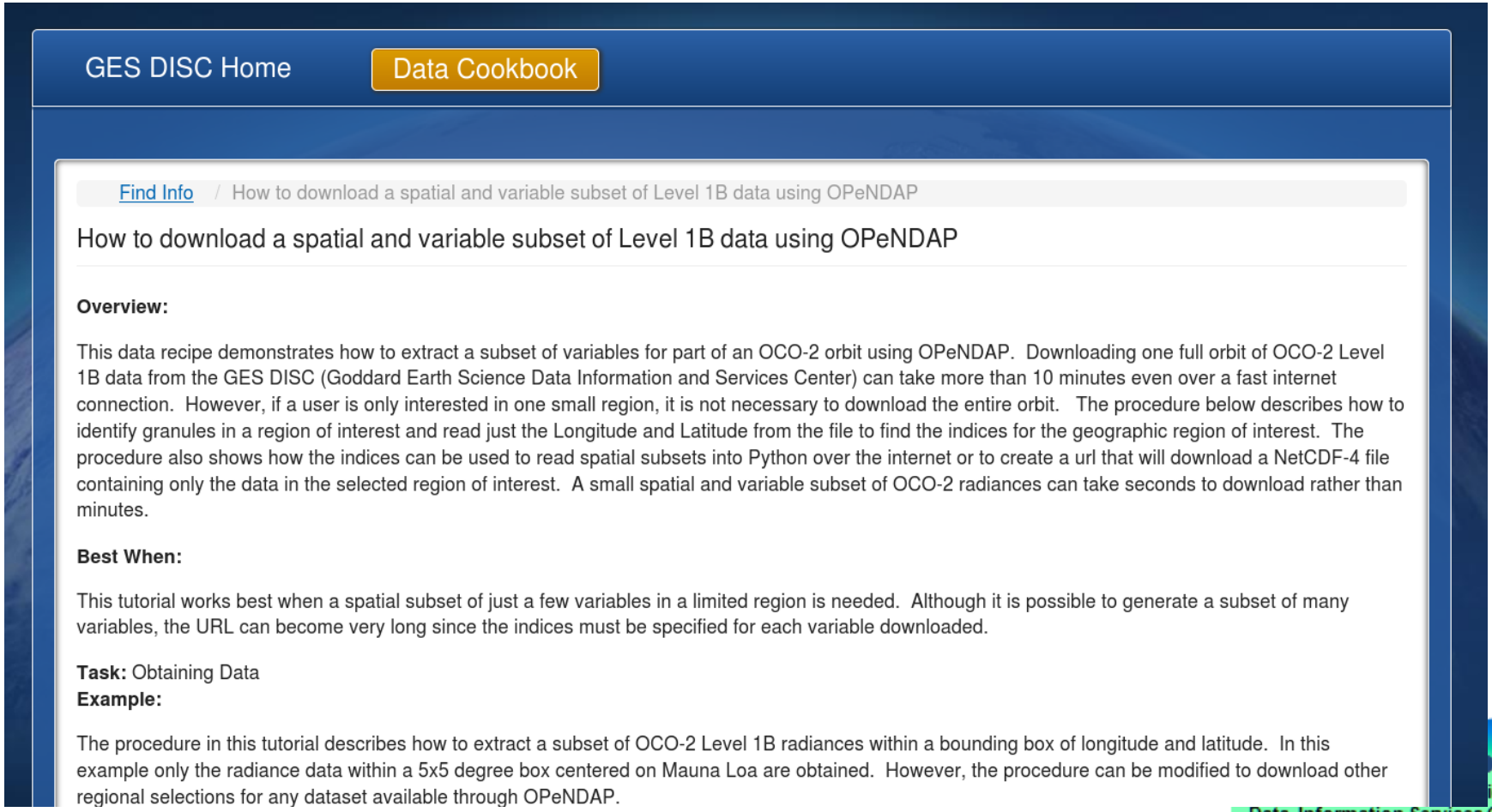
Other Current Subsetting Capabilities

- **Level 1 and Level 2**
  - OPeNDAP
  - HTTP Service (used by Mirador and SSW)
  - Pomegranate
- **Level 3**
  - OPeNDAP (used by Mirador and SSW)
  - Pomegranate

These services may also be accessed interactively by user defined scripts.

Current Subsetting Capabilities Using Scripts

"Data recipe" on downloading spatial and variable subsets of OCO-2 L1B data using OpenSearch and OPeNDAP can be applied to other data sets.



Subsetting Capabilities Under Development

Subsetting capabilities will be integrated into the new GES DISC web page.

Almost all functionality should remain as well as several enhancements:

- Remove current limitations on number of files in the download list. (*there still may be some restrictions*)
- Enable spatial subsets of Level 1 and Level 2 data.
- Enable aggregation of variables:
  - Time aggregation
  - Aggregation accross different data sets (we call this a “Data List”)

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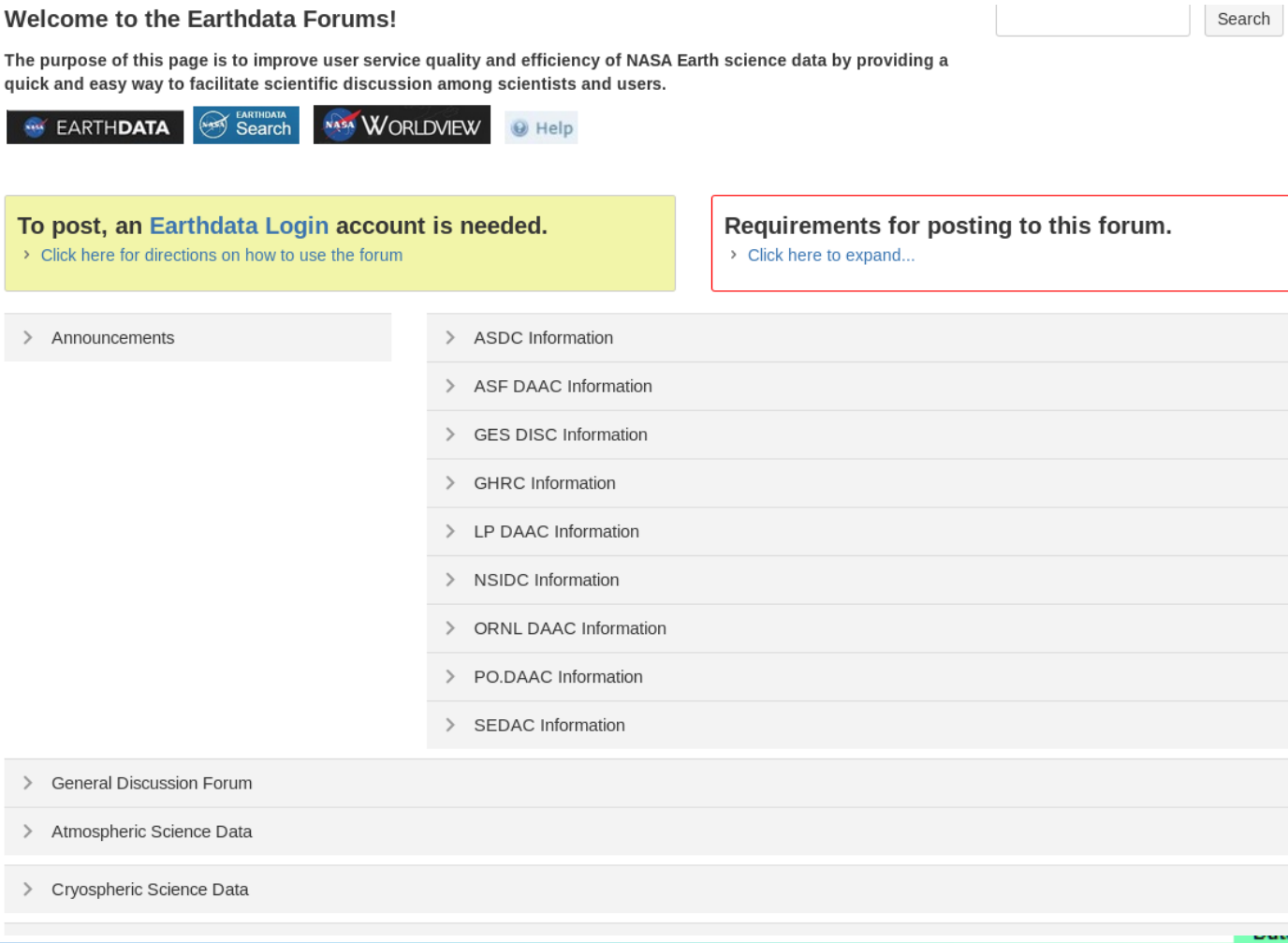
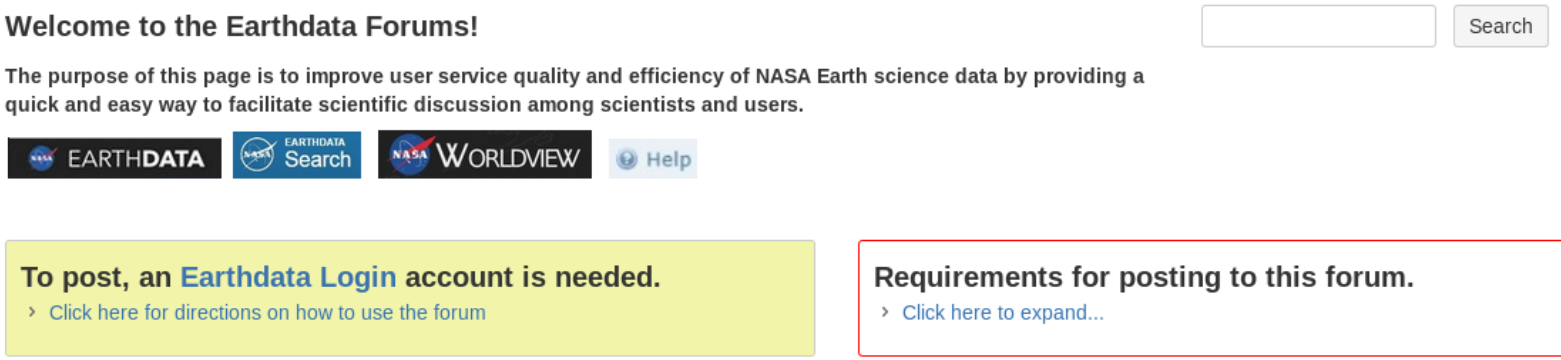
User Forum

The User forum is the result of a User Working Group Recommendation and will allow interaction among data **users**, **providers**, and **producers**.



User Forum

The format is still under development but the forum should be public soon.



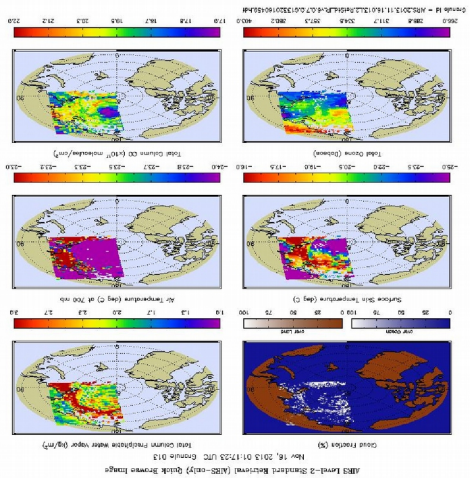
Data Lists

"Data Lists" are like "Play Lists" of music which may contain songs from different albums but data lists will contain variables from different data sets.

Subterranean Homesick Blues
Mr. Tambourine Man

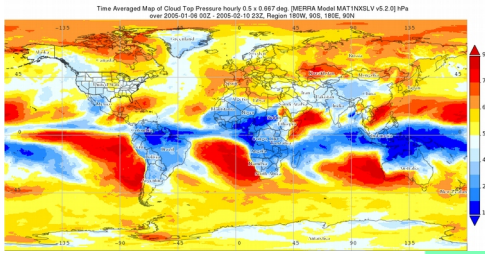
Mr. Tambourine Man

AIRX2RET



TSurfStd
TSurfAir

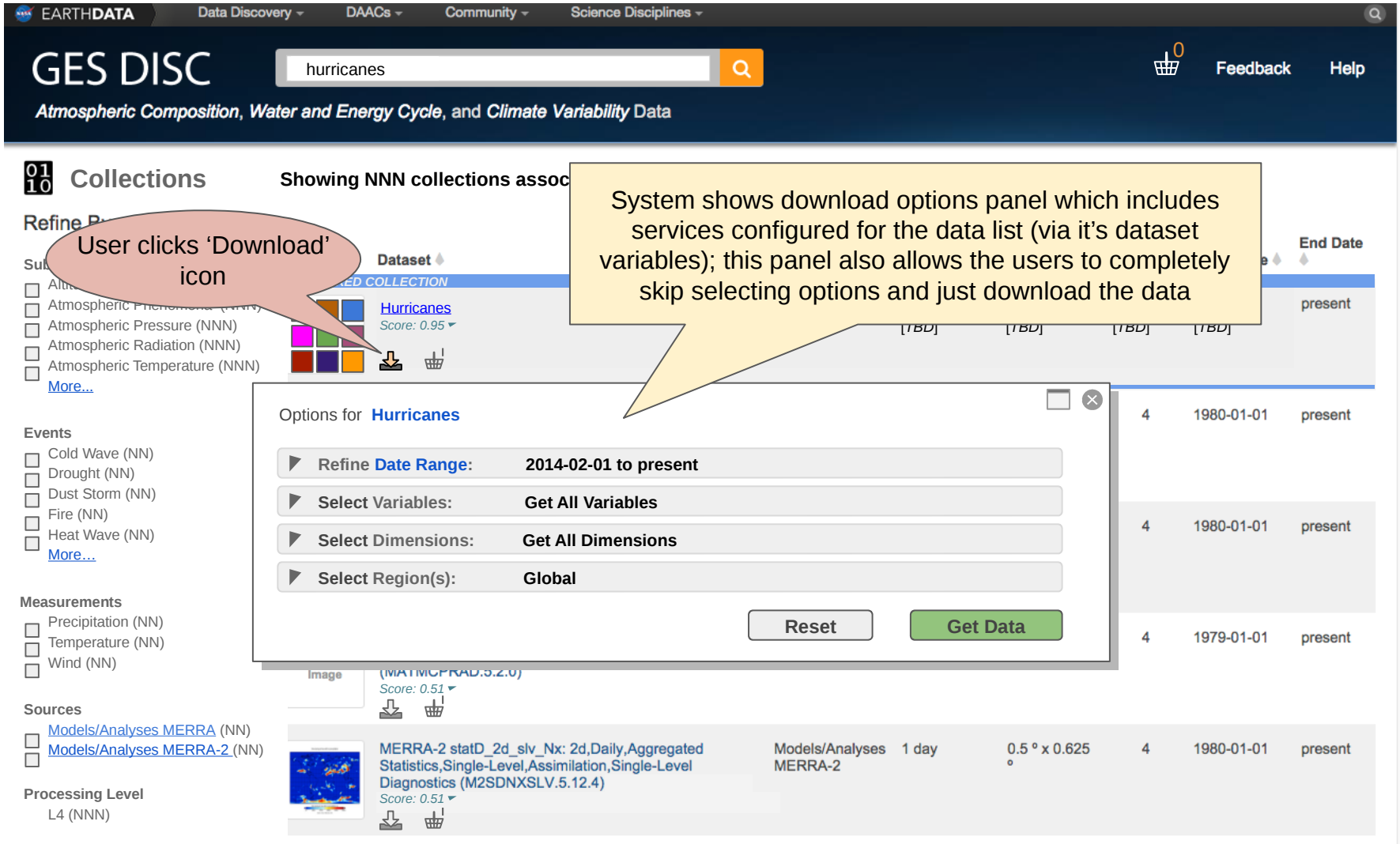
MAT1NXSLV



TS
T2M
T10M

Data List Mockup

MOCKUP



Intercomparison of Surface Temperatures from AIRS, MERRA, and MERRA2, with NOAA and GCNet Weather Stations at the summit of Greenland

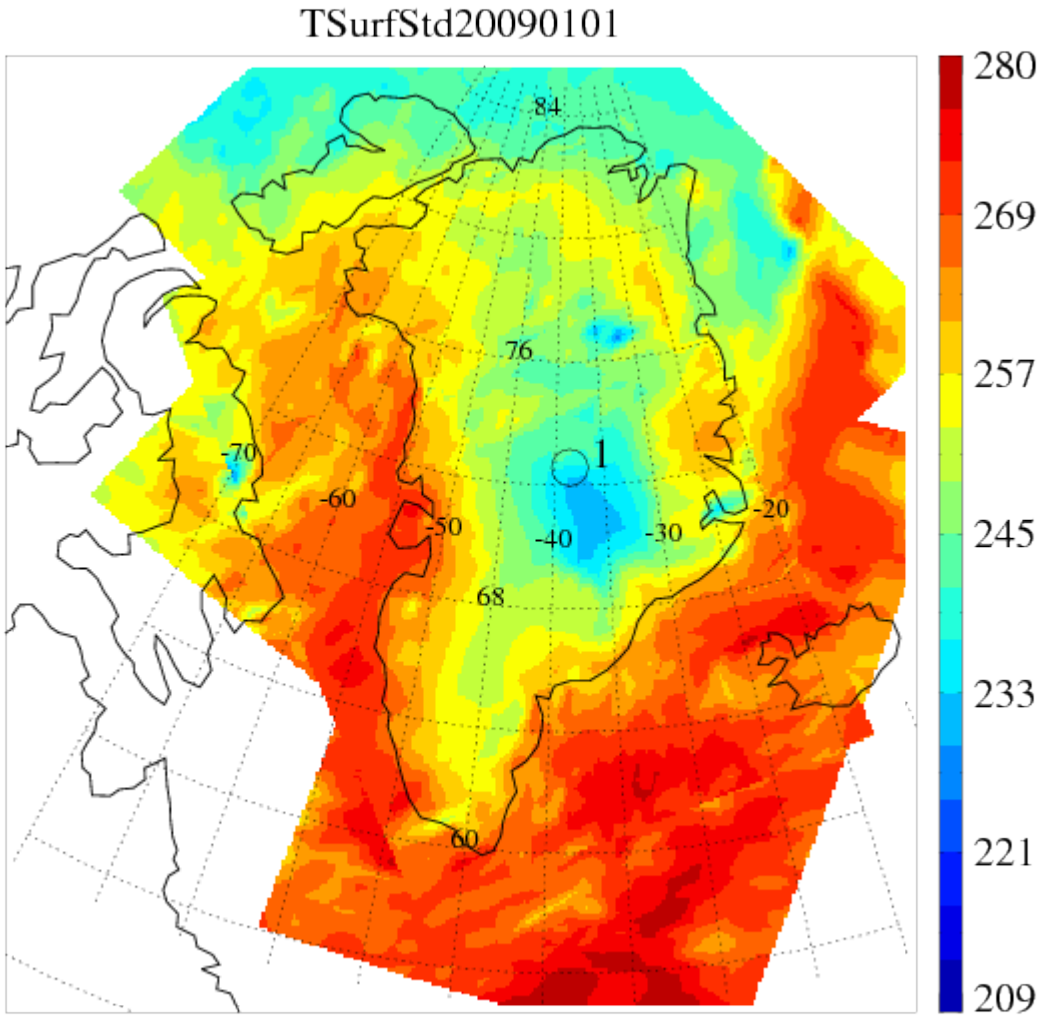
Thomas Hearty, Jae Lee, Dong Wu, Christopher Shuman, Richard Cullather, John Blaisdell, Joel Susskind

Data Lists: Greenland station use case

The following use case describes a data list comprised of variables from multiple data sets that are matched up in Time and Space with Greenland Station Observations:

- AIRX2RET (**TSurfStd**, **TSurfAir**, **CldFrcTot**)
- AIRI2CCF (**scanang**)
- AIRABRAD (**brightness_temp**)
- MAT1NXSLV (**TS**, **T2M**, **T10M**)
- M2T1NXSLV (**TS**, **T2M**, **T10M**)

Data Lists: Greenland station use case

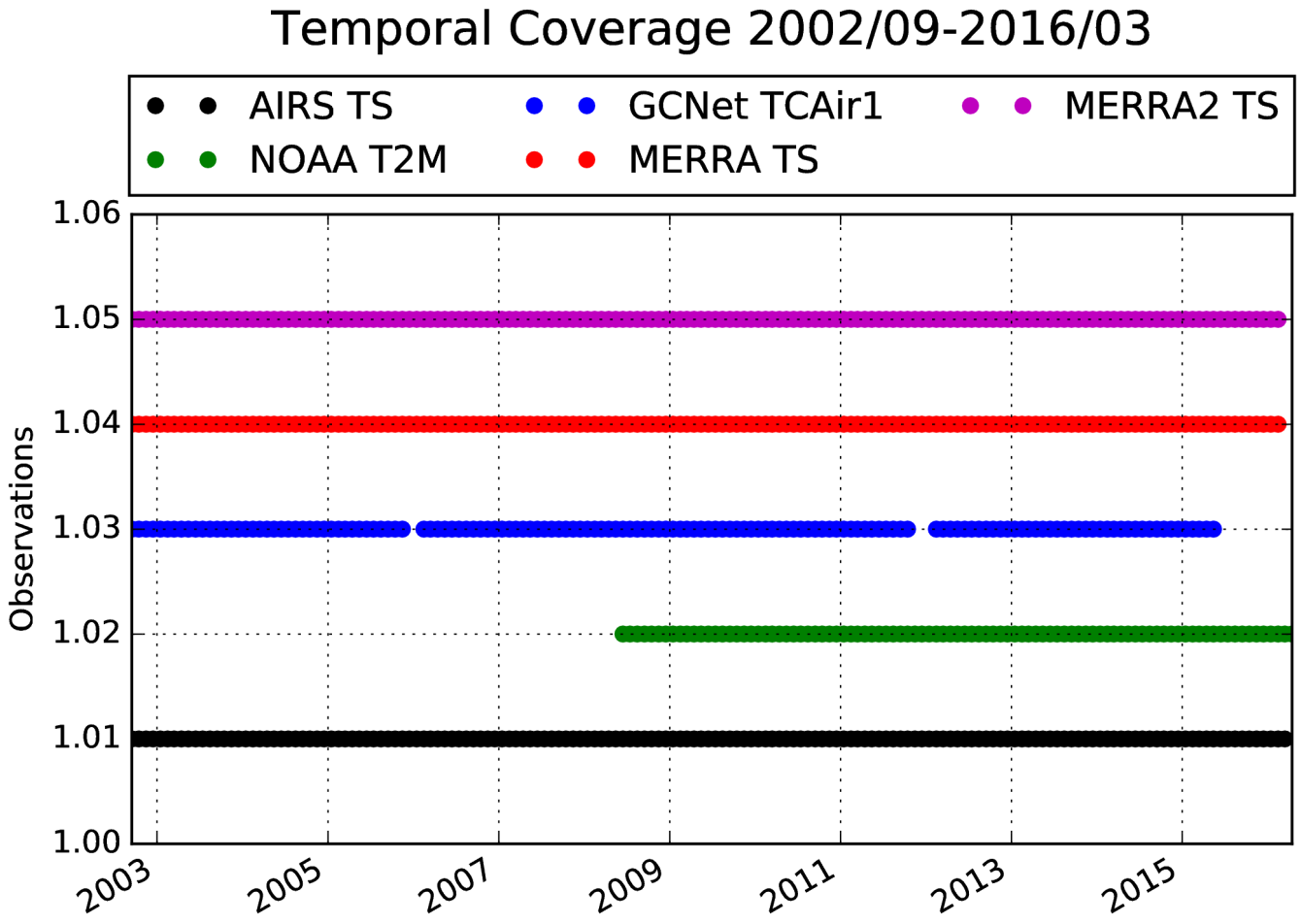


Typically there are 4-5 observations per day at Greenland's summit

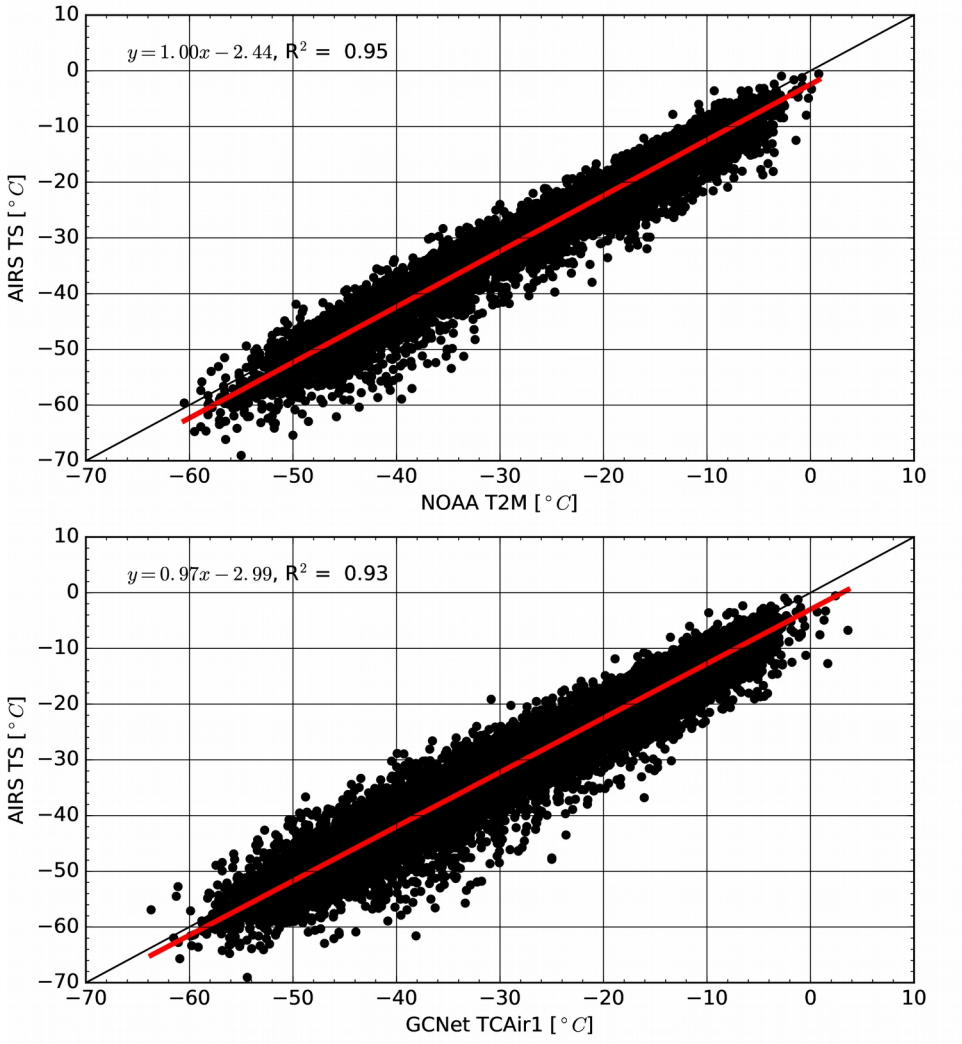
Data Lists: Greenland station use case

- Includes all AIRS observations **within a 30 km radius** of a point midway between the NOAA and GCNet Stations
- The NOAA and GCNet stations are separated by ~ 0.67 km
- NOAA Station measures the 2-meter and 10-meter temperatures
- GCNet Station measures ~ 1-meter and 2-meter temperature

Data Lists: Greenland station use case

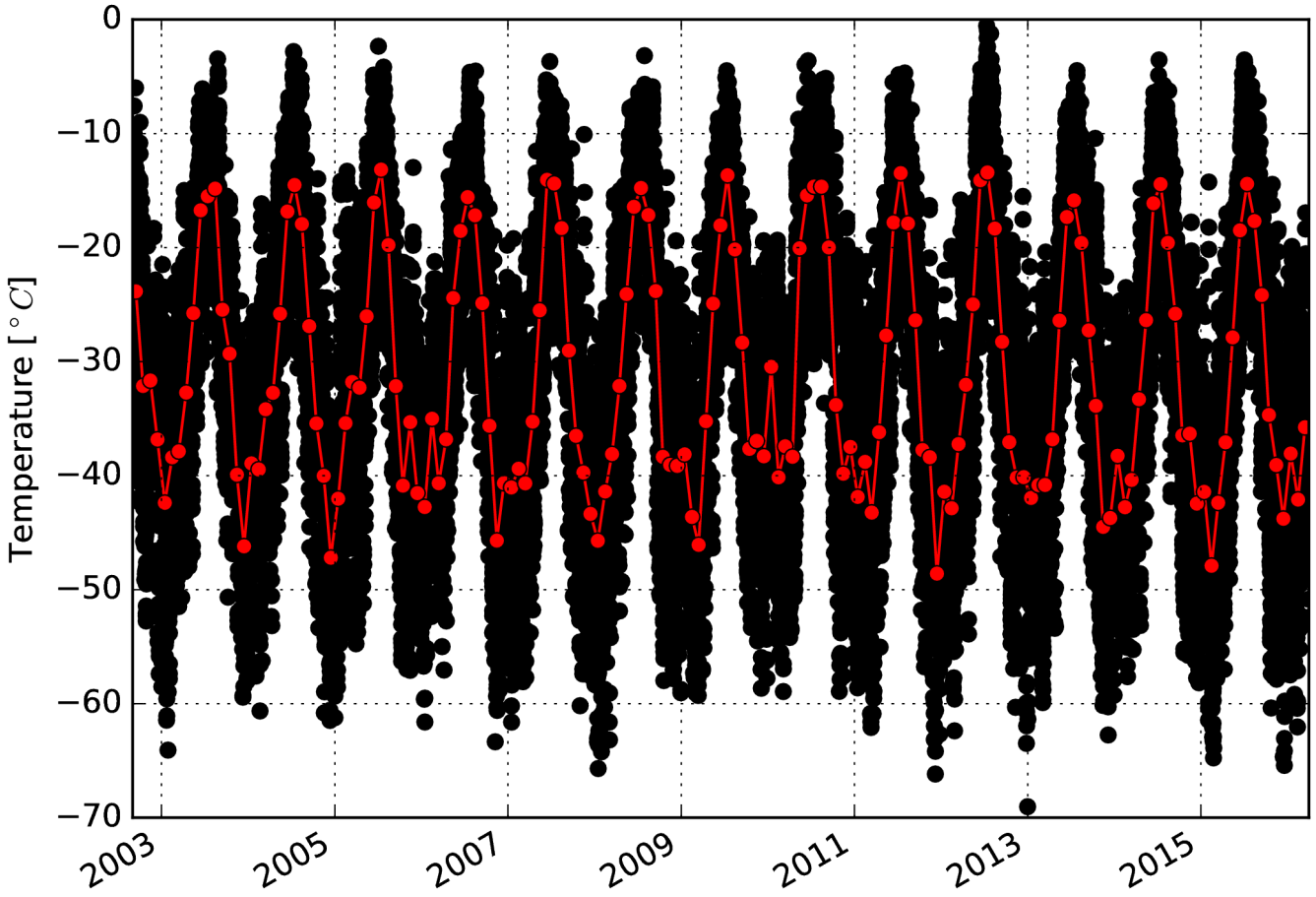


Data Lists: Greenland station use case



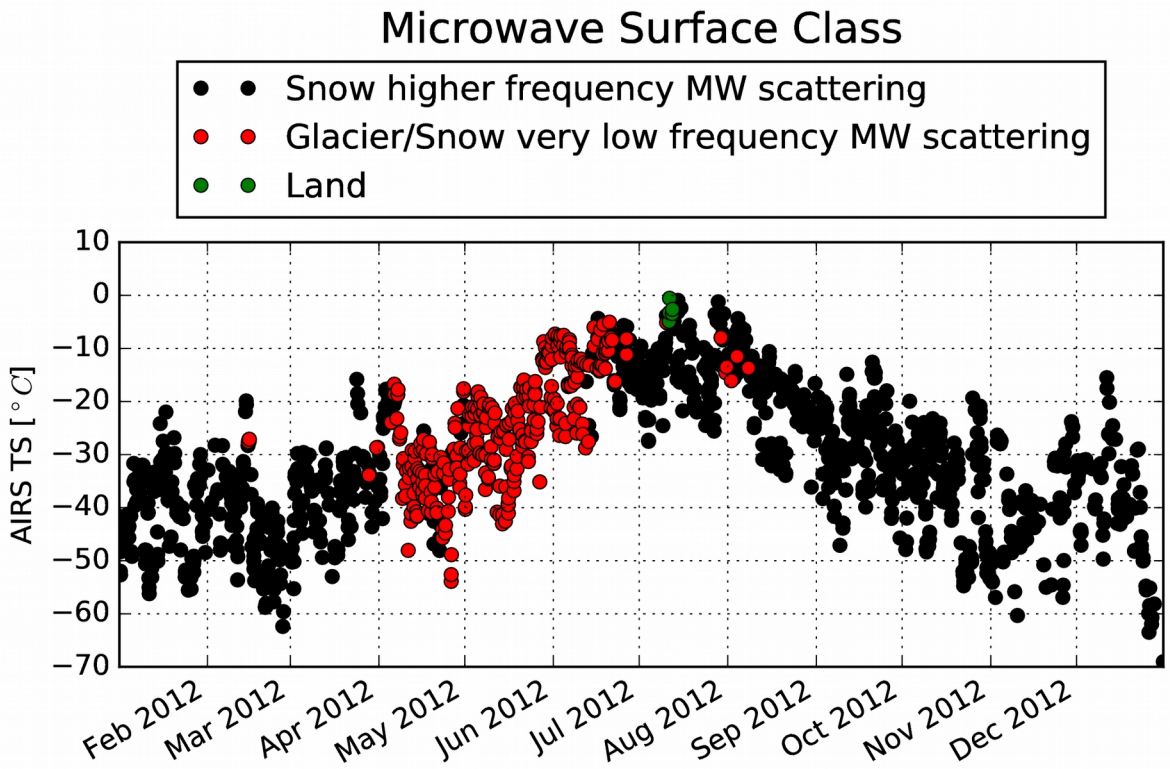
There is a fairly good agreement between the AIRS Surface Temperature (TS and the NOAA T2M and GCNet TCAir1)

Data Lists: Greenland station use case



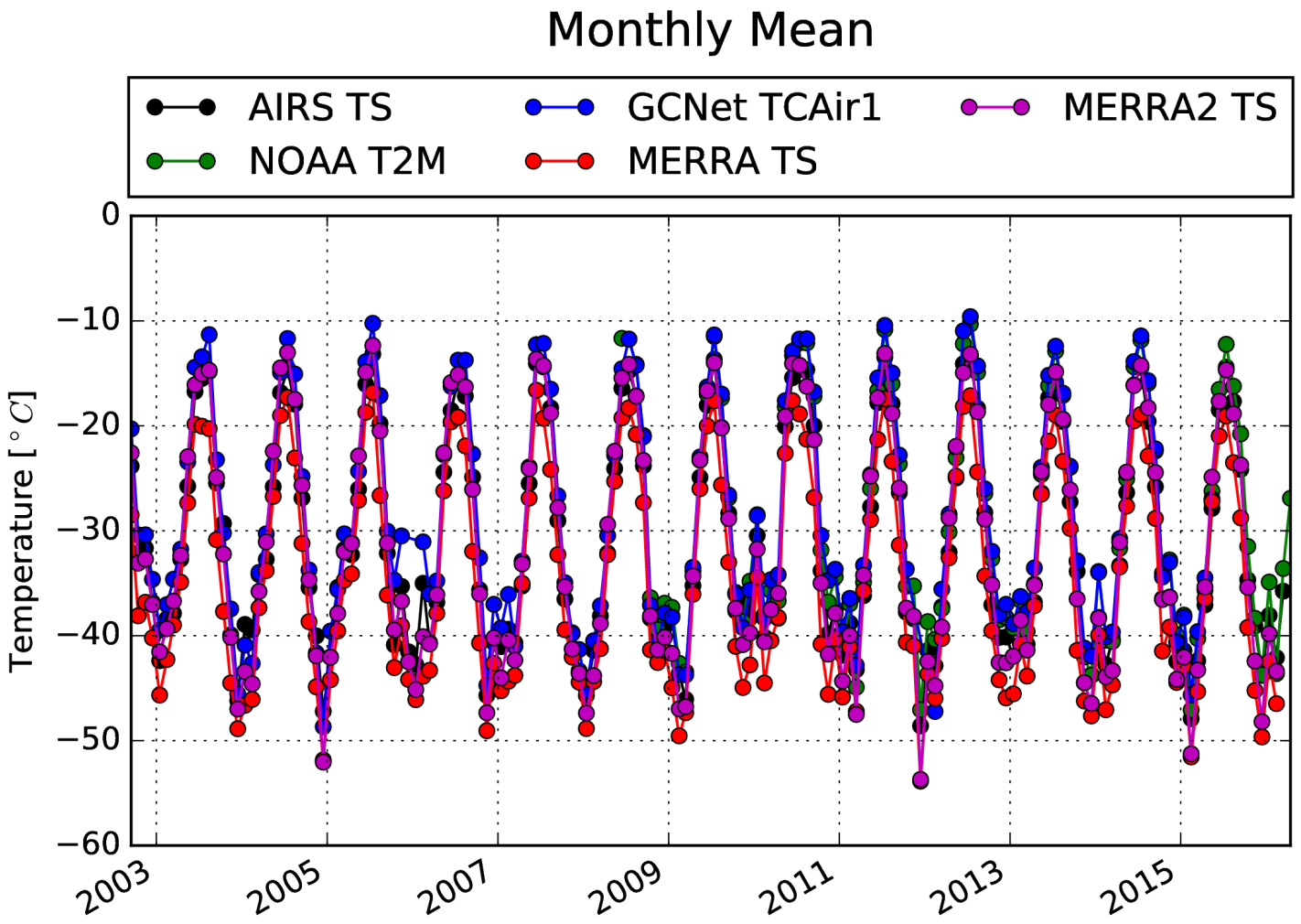
A time series of all 23,278 AIRS Surface Skin Temperature measurements. The red points are monthly averages.

Data Lists: Greenland station use case

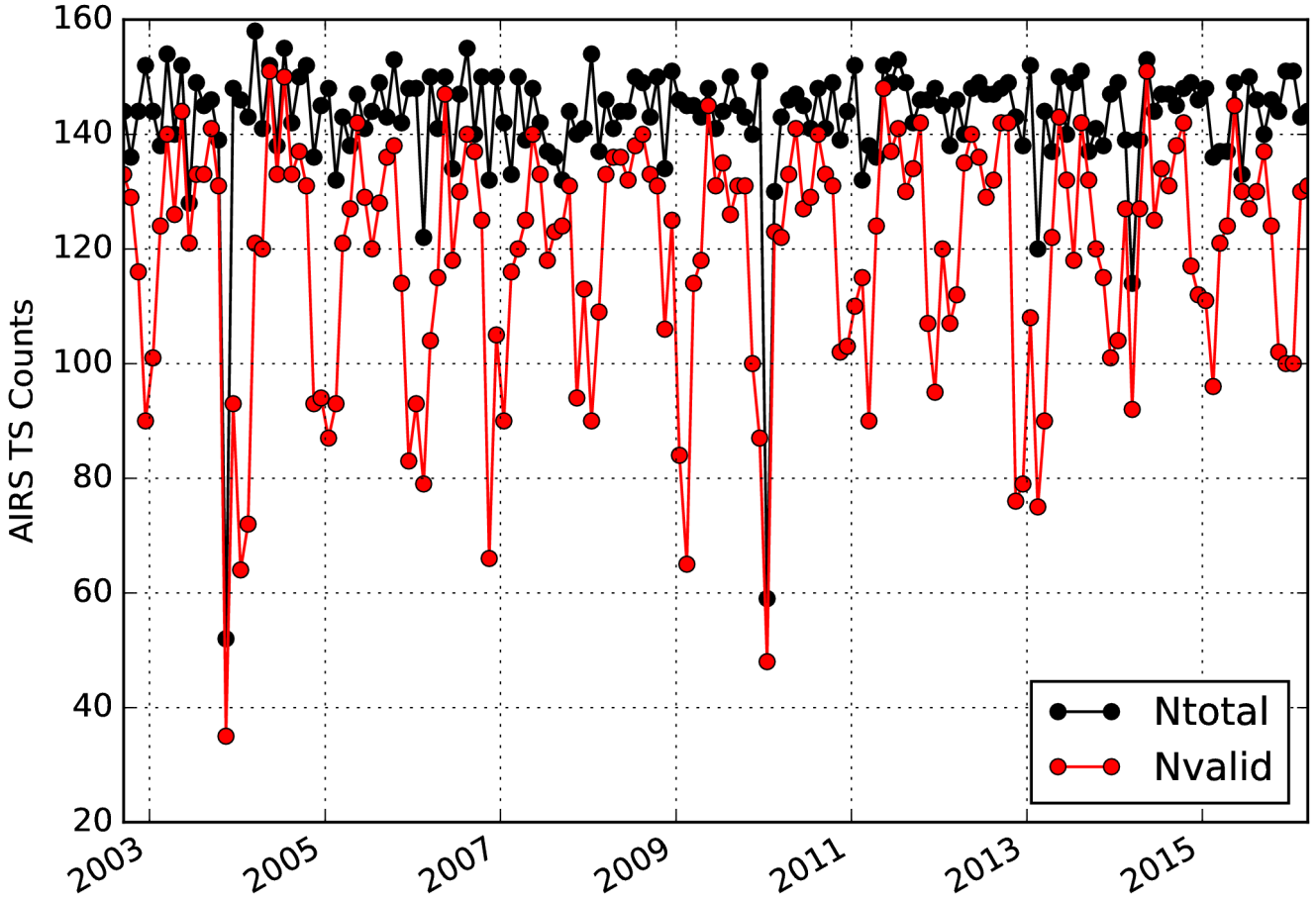


The melting at the summit of Greenland in July 2012 caused a change in the Micrwave emissivity such that the MWSurface Class reported land

Data Lists: Greenland station use case

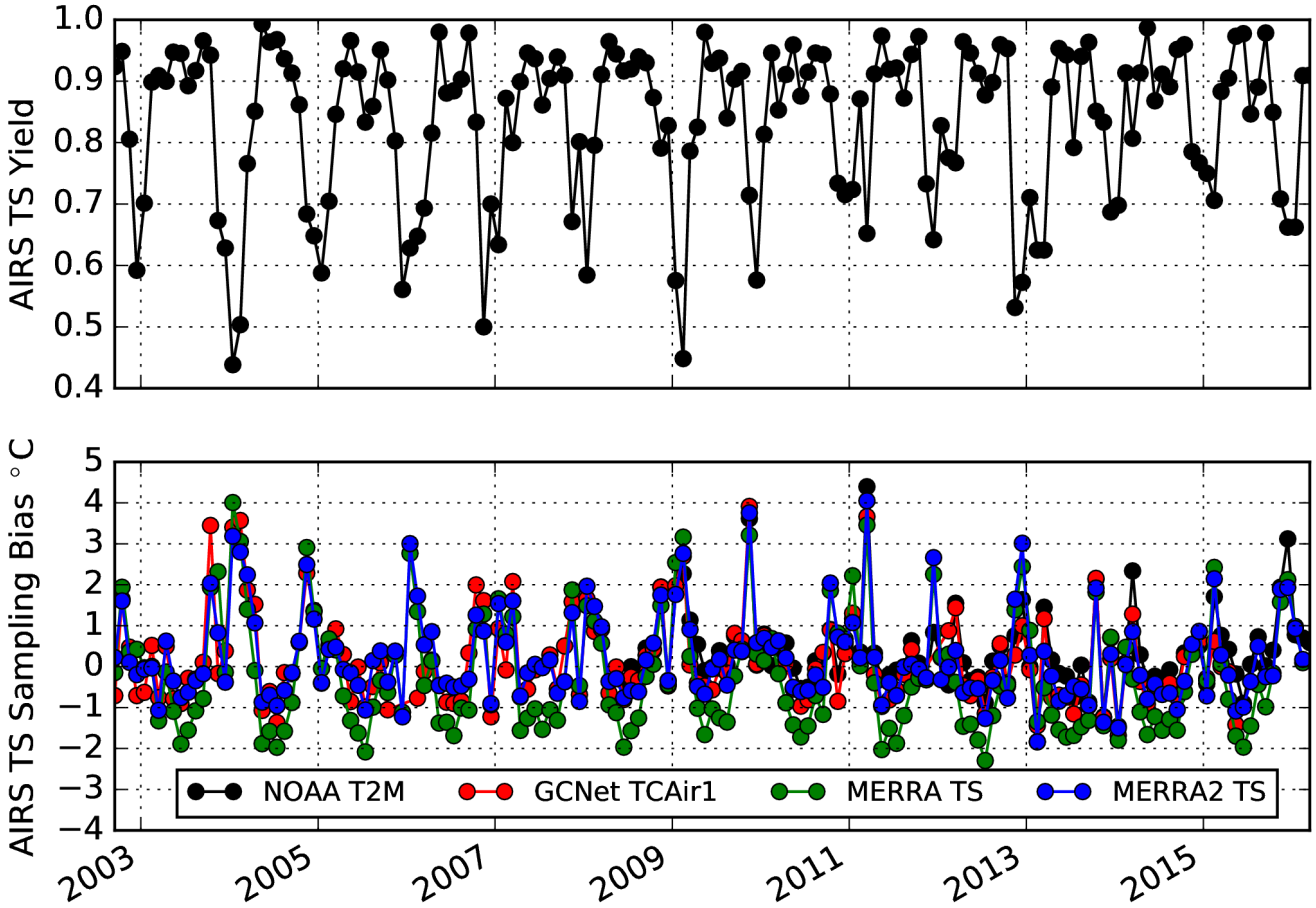


Data Lists: Greenland station use case



There is a significant decrease in the yield during the winter.

Data Lists: Greenland station use case



- The sampling bias can be as much as +4° in the winter
- The sampling bias estimates from MERRA2 agree with those using the station measurements
- MERRA shows an anomolous -2° sampling bias in the summer

Summary

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